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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 10/506,521  | 03/14/2005  | Alexandre Rouxel     | W51.12-0016         | 3090             |
| 27367   | 7590        | 08/20/2008           |                     |                  |
| WESTMAN CHAMPLIN & KELLY, P.A.<br>SUITE 1400<br>900 SECOND AVENUE SOUTH<br>MINNEAPOLIS, MN 55402-3244 |             |                      | EXAMINER            |                  |
|   |             |                      | ALPHONSE, FRITZ     |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 2112                |                  |
|   |             |                      | MAIL DATE           | DELIVERY MODE    |
|   |             |                      | 08/20/2008          | PAPER            |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

|                              |                                      |  |
|------------------------------|--------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/506,521 | <b>Applicant(s)</b><br>ROUXEL, ALEXANDRE |
|                              | <b>Examiner</b><br>FRITZ ALPHONSE    | <b>Art Unit</b><br>2112                  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 21 May 2008.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,4-14,17-22,24 and 25 is/are rejected.
- 7) Claim(s) 2, 3, 15, 16, 23 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_
- 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

**DETAILED ACTION**

1. This Office Action is in response to the amendment filed on 5/21/2008. Claims 1 and 25 are amended.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 4-14, 17-22, 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hladik (U.S. Pat. No. 6,192,501) in view of Kobayashi (U.S. Pat. No. 6,873,665) and further in view of Sugimoto (U.S. Pat. No. 6,807,329).

As to claim 1, Hladik discloses a Signal processing method using a MAP (Maximum A Posteriori) type algorithm to determine a likelihood ratio of a set of states of a lattice, each of the states being associated with at least one intermediate variable, belonging to the group including a so called "forward" variable and a so-called "backward" variable, propagated by the said MAP algorithm and calculated recursively, in a direct direction and in an indirect direction respectively at the said instant with respect to the said lattice (col. 2, lines 30-44), wherein the method comprises: reducing the number of states selected by the said MAP type algorithm so as to calculate the said likelihood ratio (col. 1, lines 48-62).

Hladik does not explicitly disclose the step of assigning at least one determined value to the corresponding said forward and/or backward variable, so as to calculate an approximate likelihood ratio, at least for some non-selected states.

However, the limitation is obvious and well known in the art, as evidenced by Kobayashi (col. 7, lines 33-57).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to improve upon the signal processing system, as disclosed by Kobayashi. Doing so would provide a system capable of maintaining a high coding rate and a detector which detects data sequences in the order of higher likelihood ratio.

In addition, as to claim 1, Hladik does not explicitly disclose "calculating said likelihood ratio for the selected states and calculating said approximate likelihood ratio at least for some non-selected states." However, the limitations are obvious and well known in the art, as evidenced by Sugimoto (col. 7, lines 11-26).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to improve upon the soft-in, soft-out decoder used for iterative error correction, as disclosed by Sugimoto. Doing so would provide an iterative error correction decoder and reduces the memory amount without degrading decoding performance.

As to claims 4-14, 17-22, 24, the dependent claims 5-11, 13, 17-22, 24 included in the statement of rejection but not specifically addressed in the body of the rejection have inherited the deficiencies of the parent claim 1 and have not resolved the deficiencies. Therefore, they are rejected based on the same rationale as applied to the parent claim above.

As to claim 25, Hladik discloses a communication signals receiver comprising means for implementing a MAP (Maximum A Posteriori) type algorithm to determine a likelihood ratio of a set of states of a lattice, wherein each of the said states is associated with at least one intermediate variable belonging to the group comprising a so-called "forward" variable and a so-

called "backward" variable propagated by the said MAP algorithm and calculated recursively in a direct direction and in an indirect direction respectively at the said instant k with respect to the said lattice (col. 2, lines 30-44), wherein the means for implementing the MAP type algorithm further comprises: means of reducing the number of states selected by the said MAP type algorithm in order to make a calculation of the said likelihood ratio, for at least some non-selected states (col. 1, lines 48-62).

Hladik does not explicitly disclose means for assigning at least one determined value to the corresponding said forward variable and/or backward variable, so as to calculate an approximate likelihood ratio.

However, the limitation is obvious and well known in the art, as evidenced by Kobayashi (col. 7, lines 33-57).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to improve upon the signal processing system, as disclosed by Kobayashi. Doing so would provide a system capable of maintaining a high coding rate and a detector which detects data sequences in the order of higher likelihood ratio.

In addition, as to claim 25, Hladik does not explicitly disclose "means of calculating said likelihood ratio for the selected states and calculating said approximate likelihood ratio at least for some non-selected states." However, the limitations are obvious and well known in the art, as evidenced by Sugimoto (col. 7, lines 11-26).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to improve upon the soft-in, soft-out decoder used for iterative error correction,

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as disclosed by Sugimoto. Doing so would provide an iterative error correction decoder and reduces the memory amount without degrading decoding performance.

***Allowable Subject Matter***

4. Claims 2 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 3, 15-16 would be allowed by virtue of dependency.

***Response to Arguments***

5. Applicant's arguments filed on 5/21/2008 have been fully considered but they are not persuasive.

6. Applicant (see remarks page 9) asserts that Hladik does not describe, nor suggest, the step of reducing the number of states selected by said MAP type algorithm...

The examiner respectfully disagrees because Hladik clearly discloses a Signal processing method using a MAP (Maximum A Posteriori) type algorithm to determine a likelihood ratio of a set of states of a lattice, which reduces the number of states selected by the said MAP type algorithm so as to calculate the said likelihood ratio (col. 1, lines 48-62).

In addition, in regard to applicant's amendment with respect to claims 1 and 25, the prior art of Sugimoto has been added for new ground of rejection.

***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).  
Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fritz Alphonse, whose telephone number is (571) 272-3813. The examiner can normally be reached on M-F, 8:30-6:00, Alt. Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jacques Louis-Jacques, can be reached at (571) 272-6962.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-3824

Information regarding the status of an application may also be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Fritz Alphonse

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August 14, 2008

/Shelly A Chase/

Primary Examiner, Art Unit 2112